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ABSTRACT

This brief report summarizes the findings and conclusions of studies concerning the relation between birth order and various aspects of personality and intellectual development. Major topics discussed are the relation between birth order of the child and: (1) the effects of sex and spacing between siblings on personality characteristics of the child (self-confidence, aggressiveness, criticalness, jealousy, etc.); (2) parents' expectations of the child and amount of attention shown to the child; (3) the degree of anxiety shown in dangerous or unfamiliar situations, the degree of risk-taking behavior, and the degree of conformity; (4) masculinity and femininity; (5) popularity among peers; (6) family size and intelligence. The pamphlet also mentions a possible bias in some birth-order research due to the high percentage of firstborn children in the population compared to children in other ordinal positions. (SS)

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What Research Shows About Birth Order, Personality, and IQ

By Herbert Yahraes

Is there any advantage—or disadvantage—to being the first, second, third, fourth . . . or last child in the family?

Put another way, does birth order make any difference?

This question has fascinated hundreds of investigators in the mental health and allied fields and has given rise to even more research projects. Generally, the answer has been *yes*. A child's ordinal position in the family has been reported to be linked to intelligence, achievement, juvenile delinquency, mental illness, success or failure in marriage, and a number of other factors. However, much of this research is now considered to have had no strong scientific merit.

Another weakness in the field of birth-order research has been the tendency to concentrate on the characteristics of the firstborn as compared with those of the secondborn or of all the children born after No. 1. Consequently, researchers have turned up a vast store of information—of varying reliability—about the oldest child, the only child, and the second child; a smaller amount of information about those who came later; and an insignificant accumulation of data, except for first and second children, about how siblings of different orders affect one another and how parents differ, if they do, in their treatment of these siblings. Further, the possible effects of the differences in spacing between children usually have not been considered, though it is reasonable to suppose that children who are only 15 months apart, for instance, are likely to experience relations with their parents and siblings different from those who are separated by 4 years.

Still another weakness is the paucity of adequate studies of mutual relationships, that is, of how parents affect children of various birth orders and spacings and of how these children affect parents.

Birth Order and Spacing

So far, the most comprehensive study taking into account not only birth order and sex but also the spacing between children is the one

carried out by Helen L. Koch of the University of Chicago two decades ago. It involved the 5- and 6-year-old children of 384 families. Each child had one brother or sister. The children's teachers rated them on a number of behaviors.

Among Koch's findings were the following:

- Birth order interacted most frequently with the factor of sex. When a child and his or her sibling were of the same sex, there were few differences in characteristics that could be attributed to birth order; when they were opposite in sex, there were many differences.
- Firstborns with a sibling of the opposite sex were judged more quarrelsome, jealous, fault-finding, exhibitionistic, and insistent on rights. In the case of secondborns, the trend seemed to be in the opposite direction.
- Boys with a much older brother, as compared with those having a much older sister, received higher average ratings on friendliness to peers, gregariousness, popularity, leadership, kindness, competitiveness, insistence on rights, and cooperativeness.
- Firstborn girls with a brother less than 2 years younger tended to score higher in all the socially positive traits than firstborn boys with a brother. But these girls also had a higher average rating in quarrelsomeness, criticalness, insistence on rights, jealousy, and competitiveness.
- Boys in the groups with the wider spacings—from 2 to 4 years and from 4 to 6 years—were more self-confident, active, aggressive, ambitious, better in sports, less apprehensive socially, and had a wider range of interests. This finding fits in with the hypothesis that, when children have been born several years apart, they often have more playmates of their own sex, age, and choosing, and thus are more likely to develop self-confidence in their relations with other children.
- When the spacing was less than 2 years, firstborn girls with brothers insisted more strongly on their rights than firstborn boys with brothers. Boys, on the average, insisted on their rights more strongly than girls only when the age difference was from 2 to 4 years.

The Role of Parental Attention and Expectations

Commonsense suggests a number of reasons why firstborns might be different from children born later. One is that, for at least a year or 2, the parents can and do give them more time and attention. For instance, investigators studying the behavior of mothers while feeding newborn infants have observed that the mothers talk more to firstborn babies, provide more stimulation of other forms, and spend more time with their babies in activities other than those strictly associated with feeding.

A recent example of such research is a study in which Blanche S. Jacobs and Howard A. Moss, of the National Institute of Mental Health, compared the behavior of mothers when their first babies

were 3 months old with the behavior of the same mothers when their second babies were at the same age. It developed that the mothers "spent less time in social, affectionate, and caretaking activities with their secondborns than they had with their firstborns." The decrease in maternal attention was greatest when the secondborn babies were girls, particularly if these girls had older sisters. The decrease was less for secondborn boys. And for boys who had firstborn sisters, there was virtually no decrease at all.

Among possible reasons for a decrease in maternal attention after the firstborn, these investigators note that (1) the mother has less time available, (2) the excitement of having a baby may have diminished, and (3) experience with the firstborn has made the mother more efficient.

The investigators have an answer also to the question of why secondborn boys got more attention than secondborn girls:

> . . . for a woman, dealing with a male infant may have been in itself enough of a novelty to have maintained a higher frequency of maternal behaviors with the male secondborn infants regardless of the sex of the older child. Not to be overlooked as a possible factor in maintaining the amount of maternal interaction with secondborn sons is the preferred status attributed to males in our culture . . . . Results from other studies suggest that male infants are more demanding. It seems possible that this sex-related characteristic also could have served to elevate the mothers' response level with the secondborn males.

Brian Sutton-Smith, of Teachers College, Columbia University, and B. G. Rosenberg, of Bowling Green State University, Ohio, reviewed the work of several hundred other investigators, conducted studies of their own, and published the results in a book in 1970 (*The Sibling*, Holt, Rinehart and Winston). It is the Bible in its field, but some important investigations have been made since it appeared.

The parents of firstborns, in addition to giving them more attention during the earliest years, are less expert about bringing up children than they are likely to be later and may expect too much of them—or possibly too little. Sutton-Smith and Rosenberg report studies indicating that mothers of firstborns do expect more of them and put more pressure on them for achievement both in babyhood and later than do mothers of later-born children. The pattern holds when the mothers of the firstborns have another child: The firstborns continue to be pushed. Perhaps because of the parental pushing, investigators have found that firstborn children tend to show more anxiety than those who come later.

Other forces may be at work. Firstborn children, one argument goes, turn quite naturally to their parents for love and attention. Since the parental response is rewarding, these children quickly learn to seek nurture from their parents and, later on, from other people. One bit of evidence: In a nursery school, children without brothers or sisters displayed help-seeking behavior more than others; firstborns displayed the same need but tended to do so indirectly, by staying close to adults.

Sutton-Smith and Rosenberg report some evidence that firstborns are more likely to be conservative and to have more tender consciences, possibly because they adopt adult values early. A 1964 study of 122 mothers and their 11- to 14-year-old sons found that only-children and firstborn children valued achievement more highly—and were more like their mothers in the value they set on achievement—than those children lower in ordinal rank. This was true, though, only at the higher socioeconomic levels.

Firstborn children may be influenced also by their role as the oldest child. Theoretically at least, this position weights them with responsibility; certainly they are sometimes asked to "mind the baby" and given similar jobs as stand-ins for the parents. There is some evidence that this surrogate role may influence occupational choice. For instance two studies have found that "firstborn college girls showed a significantly greater preference for the surrogate role of teaching," and another study has found that "firstborns have a preference for controlling and organizing the behavior of others."

The only child is a special case. Such children, some researchers have found, have higher self-esteem than other children and are more achievement-minded, but also more dependent, than firstborn children. There is also evidence that only-child boys tend to be more feminine than other boys and only-child girls more masculine than other girls.

What about middle-born children? Sutton-Smith and Rosenberg say they are the most likely to be neglected.

Anxiety and Conformity in the Firstborn

According to one group of studies reported in *The Sibling*, when college students were confronted with a dangerous or anxiety-arousing situation—typically, a psychological laboratory experiment that looked as though it were going to involve an electric shock, the firstborns showed a greater desire than the later-borns to be associated with other people while waiting for the shock. In psychological parlance, they showed *affiliative behavior*. It has been theorized that firstborn children learn such behavior early in childhood because every time they are troubled or in pain their mothers rush to give solace; later-born children have to learn to fend for themselves.

Since studies of young children tend to agree that firstborns show the most anxiety, it is possible that the firstborn students in the experiments mentioned above arrived at the laboratory in a more fearful state than the others. In line with this possibility are reports that later-born children are more likely to participate in dangerous sports and that, among fighter pilots, the aces were more likely to have been later-borns. On the other hand, one experiment suggested that, in a situation intended to arouse marked anxiety (blood-stained clothes were scattered around the room, and it looked as if the investigators were going to take blood samples and electroencephalograms), later-borns as well as firstborns seek to escape.

One large group of experimental studies set out to test the idea that the firstborn are the most likely to conform to other people's opinions in conditions of uncertainty. In a typical study, the investigator showed a child several lines drawn on paper and asked which was closest in length to another line. Before the child could reply, several children who were the investigator's accomplices gave their own opinion, which was incorrect. The firstborn males in most of the studies were more likely than others to give the same incorrect answers. This was not true of the females.

Sutton-Smith and Rosenberg report that the conditions of anxiety or uncertainty created in such experiments do appear to have a greater effect upon firstborns. But these investigators question whether the social situations created in the experiments were representative of those in real life. For example, none of the experiments controlled for the possible influence of the investigator upon the subject's behavior, though it has been shown that subjects often respond as they think the experimenter wishes.

Masculinity and Femininity

Sutton-Smith and Rosenberg gave long lists of games and other activities to some 1,800 boys and girls and asked them to choose their favorites. Boys with brothers, as compared to boys with sisters, chose a significantly higher number of activities usually considered masculine; girls with sisters, as compared to those with brothers, chose a significantly higher number of activities considered feminine. These findings had been expected. But there was an unexpected finding as well: Boys with two sisters scored higher on the masculinity scale than on its opposite. The investigators call this the *counteractive phenomenon.* They found something similar when they administered a scale of psychological femininity to a number of parents of two children, one of whom was a college sophomore. When both children were males, the father's femininity score was significantly higher than when both were females. This means that fathers of two sons "were relatively more willing . . . to admit to anxiety, discomfort, sensitivity, emotional disturbances, and so on, which are admissions about behaviors traditionally regarded as feminine." In other words, since they had fathered two sons, there could be no doubt about the fathers' masculinity; presumably they could afford to admit to traits generally held to be feminine. There was no comparable result in the case of the mothers.

The investigators suggest that the counteractive phenomenon arises because males with "too much feminine" influence may resist it or in some way come into conflict with it.

They also report a classroom study indicating that boys who have a sister and girls who have a brother tend to engage in more impulsive behavior, as measured by fidgeting, inattention, wandering, and disruptive acts. They suggest that this may be a mild form of what anthropologists call "masculine protest behavior." (In homes where the father is absent or weak, anthropologists have found, a boy origi-

nally identifies with his mother. Later on, feeling a need to prove his masculinity, he may strive for athletic prowess, become daring or aggressive, or engage in antisocial behavior. Observations of playground behavior, too, have suggested that children with opposite-sex siblings are more aggressive.

The mothers in another study recorded the problem behaviors of their children (totaling 104) every year for the first 14 years. With one exception—excessive demand for attention—all the problem behaviors of the firstborn were reported for the years *after* the start of school. The problem behaviors of the other children, though, were as numerous in one period as in the other. "The status of the firstborn during the first five years," Sutton-Smith and Rosenberg comment, "is a less adequate preparation for the transfer to secondary ties" than that of the later-born.

There was a difference, too, in the kinds of problem behaviors. Those of the firstborn tended to be of the "internalizing" type—such as shyness, oversensitivity, and restlessness in sleep. Those of the later-born tended to be "externalizing"—such as destructiveness, overactivity, and excessive competitiveness.

Birth Order as Related to Popularity

For one reason or another—possibly related to the way they have exercised responsibility or to their level of anxiety—firstborn are apparently not the most popular with their peers. In one study, more than 1,000 children in grades 3, 4, 5, and 6 chose which classmates they liked most and which they liked least. The most popular turned out to be, in order, youngest children, only children, and the second of two children. Then came the second of more than two children, firstborn children, and, as the least popular, middle children.

Norman Miller and Geoffrey Maruyama, of the University of Southern California, recently studied 1,750 grade school children in Riverside, Calif., to test the idea that last-born children should be the most popular—and firstborn children the least. The children were asked individually:

> Suppose you were picking teams to play ball during recess. Who in your class would you most like to have on your team?
>
> Pretend your teacher is going to let all of the children in your class sit next to his/her best friend. If you had your choice, who would you like to sit next to?
>
> Suppose your teacher told you that you could pick a work partner from anyone in your class. Who would you pick to be your work partner doing school work?

The results confirmed the investigators' hunch. Most often chosen to be teammates and seatmates were last-born children. Then came the middle-born. Last were the firstborn. There were no significant differences among the three groups, though, in the choice of jobmates, probably because in that case the children were looking primarily for achievers.

A Contrary View of the Importance of Birth Order

A number of birth-order studies were recently analyzed by Carmi Schooler, a social psychologist with the National Institute of Mental Health, whose early work had contributed to the view that birth order is important. He has since become skeptical. On the basis of the evidence to date, and with two possible exceptions, he now holds that the importance of a child's ordinal position in the family has yet to be demonstrated.

As an instance of why he thinks most research on this question has produced misleading results, he cites a study of some 600 National Merit Scholarship finalists whose aptitude, to judge from test scores, placed them in the top .5 percent of the general population, or even higher. More of these students had been the firstborn than would have been expected on the basis of chance alone. Similar findings relating birth order and intelligence have often been reported.

Clearly, some element other than chance must have been operating, generally assumed to be something in the interaction between parents and child. Perhaps, for example, the firstborn commanded more attention, and perhaps his achievements were more often rewarded.

But Schooler believes that this other element is simply the preponderance of firstborn children in the population. As evidence, he cites a study by two English investigators, J. S. Price and E. H. Hare, on some sources of bias in birth-order research. Price and Hare pointed out that in a population where there has been a long-term trend toward a greater number of new families being started each year than in the previous year, there should be more firstborn than last-born individuals—and, indeed, more early-born than later-born people.

The scholarship finalists mentioned above took their test in 1964. If they were 17 at the time, they had been born in 1947—and in that year, 43 percent of the children born were firstborn. The percentages the year before and the year after were also very high: 40 and 39 respectively. There would have been cause for wonder, then, if the finalists had *not* included more firstborns.

Again, a study of high school students who competed in the 1963 Westinghouse Talent Search found that, among those students of high scientific aptitude and also among those of lesser attainment, firstborns appeared to be overrepresented. Considering that all the students had been born in a boom period for new families, the only reasonable comment on this finding must again be: *No wonder.* (In this connection, Schooler calls attention to a 1970 report by two social scientists on the characteristics of stripteasers. The investigators found that 89 percent of those studied were firstborn and that 60 percent of the sample were between 20 and 30 years old. "It is probably safe to assume," Schooler notes, "that some of the excess representation of firstborns among stripteasers in this study occurred

because some members of the postwar baby boom did not become scientists when they grew up.")

Studies of a possible relation between birth order and mental illness have generally found that in small families (two to four children) the first child is more likely than the last to become schizophrenic, while in large families the situation is reversed. But when the trends in the number of new families and in the size of families are taken into account, these findings do not hold up. As for a possible relationship between birth order and hospitalization for psychiatric conditions other than schizophrenia, two large studies embracing thousands of patients have looked for and failed to find it.

Toward the end of his review and analysis, Schooler asks: "To what extent does birth order have any effect on any population under any conditions?" His answer is that it may have affected personality "in other times and other places, particularly where primogeniture has been important." Along with other investigators, he raises the possibility that "where financial and social privilege and the accompanying responsibility of maintaining the family name, property, and integrity are placed on the firstborn, there would be an increase in the likelihood of the firstborn either attaining more or breaking up." But this "does not seem to be" the case in the United States now.

Schooler concedes that several carefully conducted research projects completed since his analysis may force a slight change in his conclusions. But he points out that the birth-order effects found in these newer studies, dealing with order and intelligence, last-born children, and family structure, have not always been found in relevant studies and, when they are found, are of small magnitude.

Birth Order, Family Size, and Intellect

Scientists sometimes question other scientists' research because the sample—the number of people investigated—is regarded as too small to be representative. Such criticism can hardly be leveled at a study by Lillian Belmont and Francis A. Marolla of the relationships among birth order, family size, and intelligence.

These investigators, who are research scientists with the New York State Department of Mental Hygiene, had data on almost 400,000 19-year-old men—virtually all the males born in the Netherlands in the period 1944 through 1947. As the basis of comparison, the investigators used the results of an intelligence test known as the Raven Progressive Matrices. This is a nonverbal measure and, therefore, relatively free of cultural and other environmental influences.

No matter what the size of the families, it turned out, the 19-year-olds who had been firstborns got better scores on intelligence than the later-borns. Moreover, as birth position fell—from first to second, from second to third, and so on—the scores on the test almost always fell, too. Secondborns scored better than thirdborns, for example, and thirdborns better than fourthborns.

Family size was found to have a similar effect. Within a given birth order, scores on the tests grew worse as the number of children in-

creased. Among the young men who had been born third, for example, those from families with three children scored better than those from families with four, and these in turn scored higher than those from families with five, and so on.

Could differences in social class explain—as some investigators have conjectured—the relationship between birth order and intellectual ability? Belmont and Marolla answer *no—or at least not in this very large sample.* They did indeed find that men from the first of the three social classes into which they had divided their population scored higher than men from the second, and that the men from the second scored higher than those from the third. But the effects of birth order on intelligence held, no matter what the social class; in other words, in each social class the men who had been born earlier had better scores on the average than the others.

How greatly does birth order affect intelligence? The investigators think the answer will turn out to be *not very.*

This study included only males. However, H. M. Breland, another student of birth-order effects, reports that the findings are "remarkably similar" to his own, after a study of almost 800,000 young Americans, girls as well as boys, who had applied for National Merit Scholarships.

It is easy to speculate why size of family has some influence on children's intelligence. In general, the more mouths to be fed and bodies to be clothed and sheltered, the less the parental resources—whether measured in money, time, or interest—available, per child, for intellectually stimulating activities. But why should *order of birth* make a difference?

To that question, two University of Michigan investigators, R. B. Zajonc and Gregory B. Markus, have worked out a theoretical answer. In brief, children pull down the family's intellectual environment for at least a while. For example, if the level of each parent is set at 100 and that of the first child at near zero at birth, the average intellectual level becomes 67. This increases as the child develops. But the birth of a second child, and then of a third, a fourth, and so on, pulls it down again. The investigators state, "to the extent that some portion of the intellectual growth of children is determined by an interaction with the intellectual levels of their parents and siblings, larger families will be associated with lower intellectual levels . . . ."

The only child gives researchers a problem. Presumably he should rate as high at least as the firstborn of two children. But earlier investigations had shown that this was not the case, and the findings from the study of the Dutch 19-year-olds bear them out. In this study, the only child rated lower than the firstborn of two children and also lower than the firstborn of three. The Michigan investigators have an answer: An only child is like a lastborn child—in fact, he can be considered to be a lastborn child—in having no one to teach. "If a child does not know how to solve a particular problem," they point out, "he is not likely to ask the youngest; if he is missing a word, it is not the youngest who will supply it; if there is an ambiguity about the rules

of a game or a pattern of play, it will not be resolved by the youngest. In short, the lastborn is not a 'teacher' and neither is the only child. It would be quite surprising if the opportunity to perform such a 'teaching' function did not have benefits for intellectual performance."

A major problem in research of the kind reported here is to disentangle the differences that can be attributed to birth order from those attributable to genetic and constitutional forces and from the effects these latter differences have on interactions within the family.

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